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| APPLICATION NO.  | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO.                 | CONFIRMATION NO. |
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| 10/777,659   | 02/13/2004  | Haruyuki Nakanishi   | 12699/4                             | 5663             |
| 23838  | 7590        | 05/11/2006           |                                     |                  |
| KENYON & KENYON LLP<br>1500 K STREET N.W.<br>SUITE 700<br>WASHINGTON, DC 20005 |             |                      | EXAMINER<br>CHUO, TONY SHENG HSIANG |                  |
|  |             |                      | ART UNIT<br>1746                    | PAPER NUMBER     |

DATE MAILED: 05/11/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/777,659

Applicant(s)

NAKANISHI ET AL.

Examiner

Tony Chuo

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,3,7-10,15-17,20 and 21 is/are rejected.
- 7) ☒ Claim(s) 2,4-6,11-14,18 and 19 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>2/13/04, 11/16/05</u> . | 6) <input type="checkbox"/> Other: ____.  |

## **DETAILED ACTION**

### ***Specification***

1. The abstract of the disclosure is objected to because the length exceeds 150 words. Correction is required. See MPEP § 608.01(b).
2. The disclosure is objected to because of the following informalities: on page 16, lines 10 & 16, the word "potion" is misspelled and on page 17, line 10, the reference number "86" should be changed to "88". Appropriate correction is required.

### ***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1, 3, and 15 are rejected under 35 U.S.C. 102(b) as being anticipated by Chow et al (US 6322914). The Chow reference teaches a fuel cell system comprising: a fuel cell "100"; water recyclers "180" & "190" that are disposed outside of oxidizing gas conduit "130" and are capable of absorbing moisture; an oxidant stream flow switching device "150" that changes over status of the outer conduit water absorbing member between an absorption state of absorbing moisture in the oxidizing gas conduit and a non-absorption state of not absorbing the moisture in the oxidizing gas conduit; and a changeover control module "170" that controls the changeover module according to an operating state of the fuel cell (See Figure 3). Although Figure 3 is a schematic diagram

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for the fuel stream, the oxidant stream could be illustrated schematically in the same manner as the fuel stream with a respective flow switching device (See column 11, line 63-66).

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chow et al (US 6322914) in view of Yamamoto (JP 10-172586). The Chow reference is applied to claim 1, 3, and 15 for reasons stated above. However, the reference does not expressly teach an inner conduit water holding member that is disposed on a side of an outlet of oxidizing gas conduit to absorb the moisture in oxidizing gas conduit where the outer conduit water absorbing member comes into contact with the outlet of oxidizing gas conduit and thereby with inner conduit water holding member so as to absorb the moisture in oxidizing gas conduit via inner conduit water holding member. The Yamamoto reference does teach inner conduit water absorbing members "46" on a side of an outlet of oxidizing gas conduit "40" to absorb the moisture in oxidizing gas conduit (See Figure 1). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the Chow fuel cell to include inner conduit water absorbing members on a side of an outlet of oxidizing gas conduit where the

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water recycler comes into contact with the outlet of oxidizing gas conduit and thereby with inner conduit water absorbing member so as to absorb the moisture in oxidizing gas conduit via inner conduit water absorbing member in order to provide a fuel cell with high gas diffusion capability and high performance.

7. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chow et al (US 6322914) in view of Yamamoto (JP 10-172586) as applied to claim 7 for reasons stated above and further in view of Koumura et al (JP 2001-118596). However, the references do not expressly teach inner conduit water holding members that absorb the moisture by capillary phenomenon. The Koumura reference does teach water absorbing members "86" that absorb moisture by capillary phenomenon (See Abstract).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the Chow fuel cell to include inner conduit water absorbing members that absorb moisture by capillary phenomenon in order to improve the absorptivity of water while preventing the disturbance of the flow distribution of air in the oxidizing gas conduits.

8. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chow et al (US 6322914) in view of Koumura et al (JP 2001-118596). The Chow reference is applied to claims 1, 3, and 15 for reasons state above. However, the reference does not expressly teach outer conduit water absorbing members that absorb the moisture by capillary phenomenon. The Koumura reference does teach water absorbing members "86" that absorb moisture by capillary phenomenon (See Abstract). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made

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to modify the Chow fuel cell to include outer conduit water absorbing members that absorb moisture by capillary phenomenon in order to improve the absorptivity of water while preventing the disturbance of the flow distribution of air in the oxidizing gas conduits.

9. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chow et al (US 6322914) in view of Zhang et al (EP 1349225). The Chow reference is applied to claims 1, 3, and 15 for reasons state above. It also teaches a fuel cell stack comprising a plurality of fuel cells laying one upon another. However, the reference does not expressly teach an oxidizing gas exhaust manifold that joins respective outlets of oxidizing gas conduits formed in a plurality of fuel cells where the outer conduit water absorbing member is located in oxidizing gas exhaust manifold. The Zhang reference does teach an oxidizing gas exhaust manifold where water absorbing member "30" is located in an oxidizing gas exhaust manifold "1A". Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the Chow fuel cell to include outer conduit water absorbing members in an oxidizing gas exhaust manifold so that proper humidity of the air is maintained and the correct amount of water is always supplied to the membrane electrolyte.

10. Claims 16, 17, and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chow et al (US 6322914) in view of Koumura et al (JP 2001-118596). The Chow reference teaches a fuel cell system comprising: a fuel cell "100"; water recyclers "180" & "190" that are disposed outside of oxidizing gas conduit "130" and are capable of absorbing moisture; an oxidant stream flow switching device "150"

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that changes over status of the outer conduit water absorbing member between an absorption state of absorbing moisture in the oxidizing gas conduit and a non-absorption state of not absorbing the moisture in the oxidizing gas conduit; and a changeover control module "170" that controls the changeover module according to an operating state of the fuel cell (See Figure 3). However, the reference does not expressly teach a vehicle with the fuel cell system mounted thereon. The Koumura reference does teach a fuel cell mounted on a vehicle (See Abstract). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the Chow fuel cell for mounting onto a vehicle in order to use the fuel cell in a practical application.

11. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chow et al (US 6322914) in view of Koumura et al (JP 2001-118596) as applied to claim 16 for reasons stated above and further in view of Yamamoto (JP 10-172586). However, the references do not expressly teach an inner conduit water holding member that is disposed on a side of an outlet of oxidizing gas conduit to absorb the moisture in oxidizing gas conduit where the outer conduit water absorbing member comes into contact with the outlet of oxidizing gas conduit and thereby with inner conduit water holding member so as to absorb the moisture in oxidizing gas conduit via inner conduit water holding member. The Yamamoto reference does teach inner conduit water absorbing members "46" on a side of an outlet of oxidizing gas conduit "40" to absorb the moisture in oxidizing gas conduit (See Figure 1). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify

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the Chow fuel cell to include inner conduit water absorbing members on a side of an outlet of oxidizing gas conduit where the water recycler comes into contact with the outlet of oxidizing gas conduit and thereby with inner conduit water absorbing member so as to absorb the moisture in oxidizing gas conduit via inner conduit water absorbing member in order to provide a fuel cell with high gas diffusion capability and high performance.

***Allowable Subject Matter***

12. Claims 2, 4-6, 11-14, and 18-19 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The Chow reference teaches an oxidant stream flow switching device "150" that changes over status of the outer conduit water absorbing member between an absorption state of absorbing moisture in the oxidizing gas conduit and a non-absorption state of not absorbing the moisture in the oxidizing gas conduit and a changeover control module "170" that controls the changeover module according to an operating state of the fuel cell. However, it does not expressly teach bringing the outer conduit water absorbing member into contact with an outlet of oxidizing gas conduit to make the outer conduit water absorbing member absorb the moisture in oxidizing gas conduit and separating the outer conduit water absorbing member from the outlet of the oxidizing gas conduit to prevent the outer conduit water absorbing member from absorbing the moisture in the oxidizing gas conduit.



**Conclusion**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tony Chuo whose telephone number is (571) 272-0717. The examiner can normally be reached on M-F, 8:30AM to 5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Barr can be reached on (571) 272-1414. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

TK 5/1/06

  
MICHAEL BARR  
SUPERVISORY PATENT EXAMINER